FIG.25

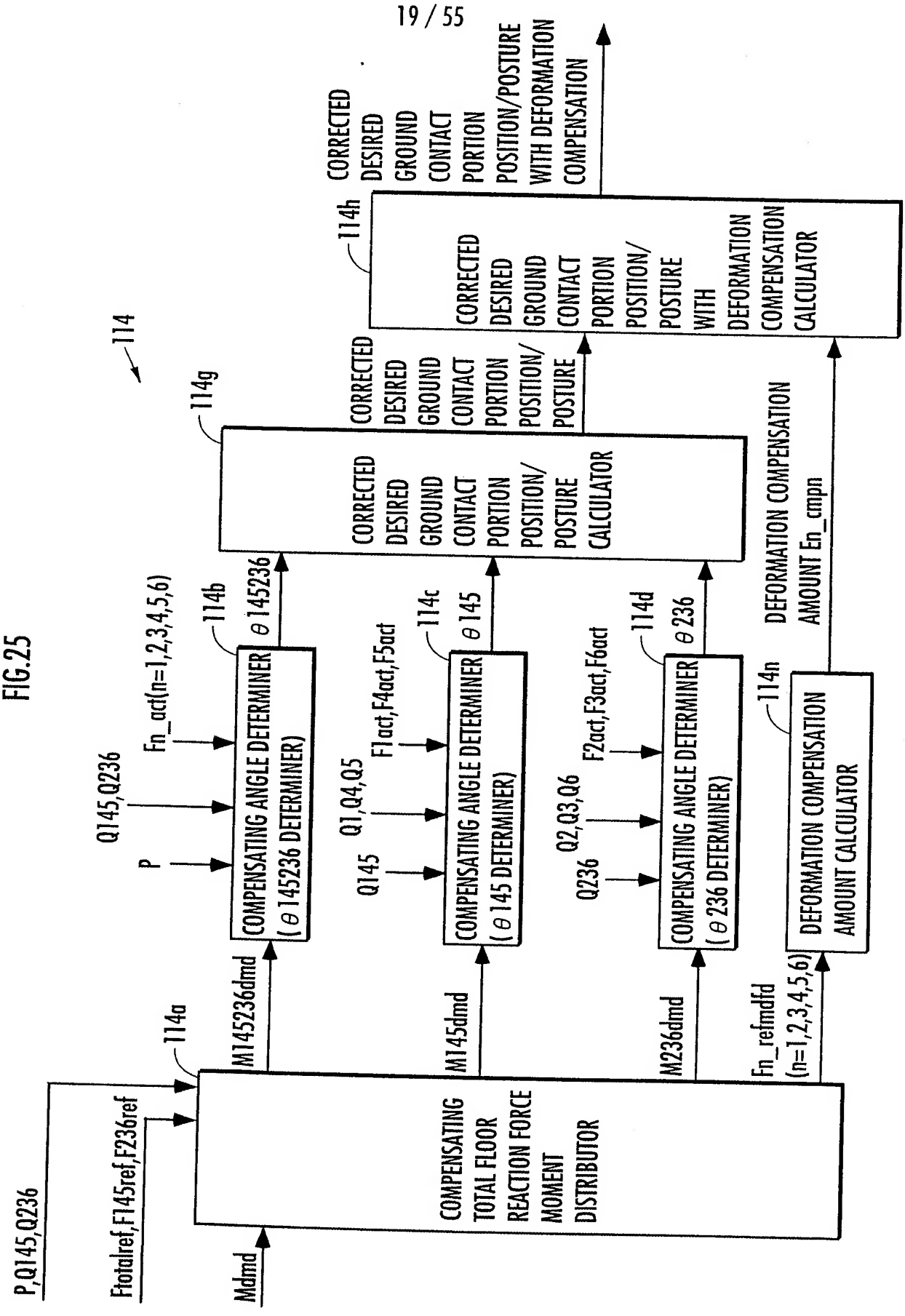
P,Q145,Q236
Ftotalref,F145ref,F236ref
Mdmd
114a
COMPENSATING TOTAL FLOOR REACTION FORCE MOMENT DISTRIBUTOR
M145236dmd
M145dmd
M236dmd
Fn_refmdfd (n=1,2,3,4,5,6)
114b
COMPENSATING ANGLE DETERMINER (θ145236 DETERMINER)
114c
COMPENSATING ANGLE DETERMINER (θ145 DETERMINER)
114d
COMPENSATING ANGLE DETERMINER (θ236 DETERMINER)
114n
DEFORMATION COMPENSATION AMOUNT CALCULATOR
Q145,Q236
P
Fn_act(n=1,2,3,4,5,6)
θ145236
Q1,Q4,Q5
Q145
F1act,F4act,F5act
θ145
Q2,Q3,Q6
Q236
F2act,F3act,F6act
θ236
DEFORMATION COMPENSATION AMOUNT En_cmpn
114
114g
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/ POSTURE CALCULATOR
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/ POSTURE
114h
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/ POSTURE WITH DEFORMATION COMPENSATION CALCULATOR
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/POSTURE WITH DEFORMATION COMPENSATION

FIG.35

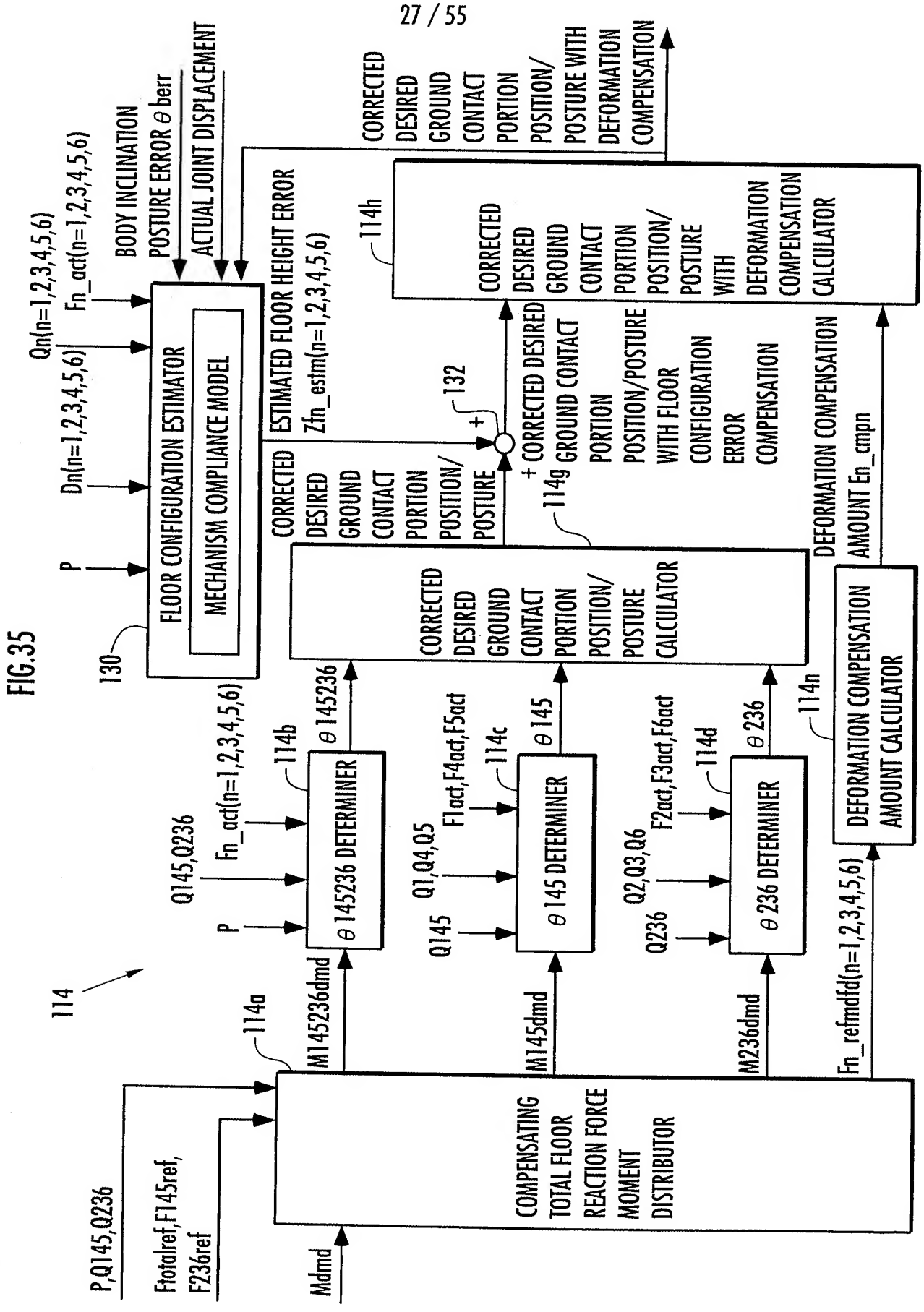
114
P,Q145,Q236
Ftotalref,F145ref,
F236ref
Mdmd
COMPENSATING TOTAL FLOOR REACTION FORCE MOMENT DISTRIBUTOR
114a
M145236dmd
M145dmd
M236dmd
Fn_refmdfd(n=1,2,3,4,5,6)
DEFORMATION COMPENSATION AMOUNT CALCULATOR
114n
DEFORMATION COMPENSATION AMOUNT En_cmpn
θ 145236 DETERMINER
θ 145 DETERMINER
θ 236 DETERMINER
114b
114c
114d
θ145236
θ145
θ236
P
Q145,Q236
Fn_act(n=1,2,3,4,5,6)
Q145
Q1,Q4,Q5
F1act,F4act,F5act
Q236
Q2,Q3,Q6
F2act,F3act,F6act
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/POSTURE CALCULATOR
114g
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/POSTURE
+ CORRECTED DESIRED GROUND CONTACT PORTION POSITION/POSTURE WITH FLOOR CONFIGURATION ERROR COMPENSATION
132
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/ POSTURE WITH DEFORMATION COMPENSATION CALCULATOR
114h
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/ POSTURE WITH DEFORMATION COMPENSATION
ESTIMATED FLOOR HEIGHT ERROR Zfn_estm(n=1,2,3,4,5,6)
ACTUAL JOINT DISPLACEMENT
BODY INCLINATION POSTURE ERROR θ berr
Fn_act(n=1,2,3,4,5,6)
Qn(n=1,2,3,4,5,6)
Dn(n=1,2,3,4,5,6)
P
130
FLOOR CONFIGURATION ESTIMATOR
MECHANISM COMPLIANCE MODEL

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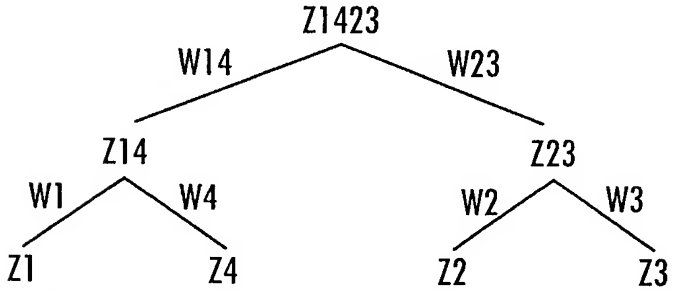
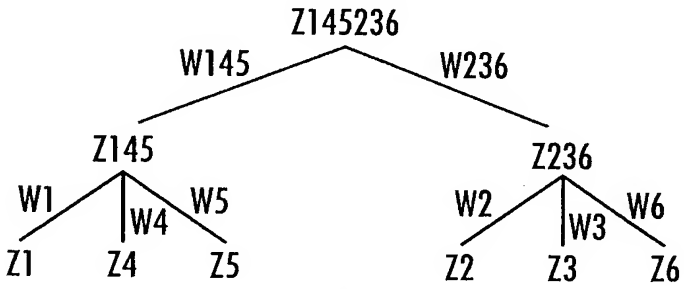
FIG.42



$Z14_with_bias = W1 \cdot Z1_with_bias + W4 \cdot Z4_with_bias$
$Z23_with_bias = W2 \cdot Z2_with_bias + W3 \cdot Z3_with_bias$
$Z1423_with_bias = W14 \cdot Z14_with_bias + W23 \cdot Z23_with_bias$

$Z1_rel = Z1_with_bias - Z14_with_bias$
$Z4_rel = Z4_with_bias - Z14_with_bias$
$Z2_rel = Z2_with_bias - Z23_with_bias$
$Z3_rel = Z3_with_bias - Z23_with_bias$
$Z14_rel = Z14_with_bias - Z1423_with_bias$
$Z23_rel = Z23_with_bias - Z1423_with_bias$

FIG.43



$Z145_with_bias = W1 \cdot Z1_with_bias + W4 \cdot Z4_with_bias + W5 \cdot Z5_with_bias$
$Z236_with_bias = W2 \cdot Z2_with_bias + W3 \cdot Z3_with_bias + W6 \cdot Z6_with_bias$
$Z145236_with_bias = W145 \cdot Z145_with_bias + W236 \cdot Z236_with_bias$

$Z1_rel = Z1_with_bias - Z145_with_bias$
$Z4_rel = Z4_with_bias - Z145_with_bias$
$Z5_rel = Z5_with_bias - Z145_with_bias$
$Z2_rel = Z2_with_bias - Z236_with_bias$
$Z3_rel = Z3_with_bias - Z236_with_bias$
$Z6_rel = Z6_with_bias - Z236_with_bias$
$Z145_rel = Z145_with_bias - Z145236_with_bias$
$Z236_rel = Z236_with_bias - Z145236_with_bias$

FIG.49

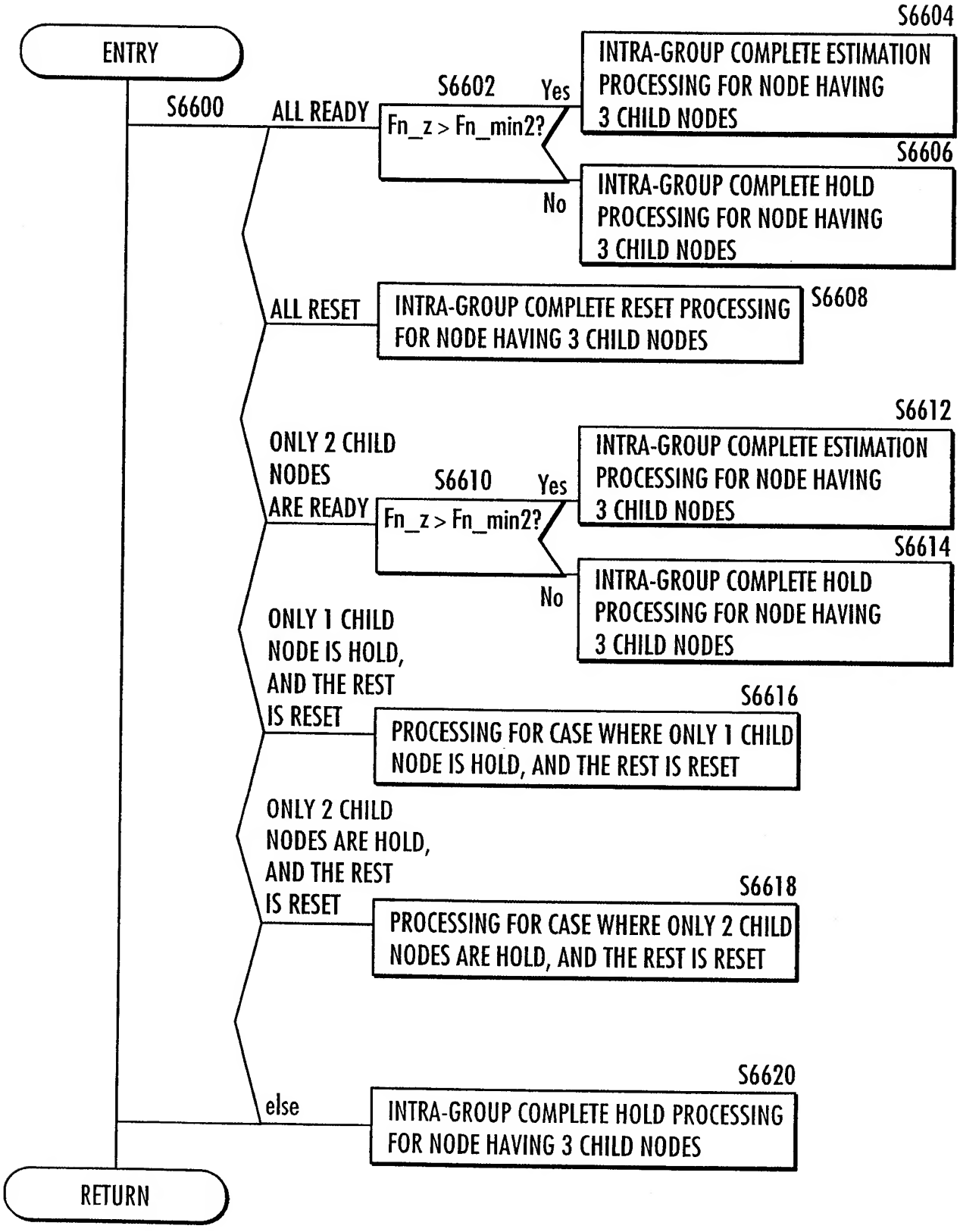

ENTRY
S6600
ALL READY
S6602
Fn_z > Fn_min2?
Yes
S6604
INTRA-GROUP COMPLETE ESTIMATION PROCESSING FOR NODE HAVING 3 CHILD NODES
No
S6606
INTRA-GROUP COMPLETE HOLD PROCESSING FOR NODE HAVING 3 CHILD NODES
ALL RESET
INTRA-GROUP COMPLETE RESET PROCESSING FOR NODE HAVING 3 CHILD NODES
S6608
ONLY 2 CHILD NODES ARE READY
S6610
Fn_z > Fn_min2?
Yes
S6612
INTRA-GROUP COMPLETE ESTIMATION PROCESSING FOR NODE HAVING 3 CHILD NODES
No
S6614
INTRA-GROUP COMPLETE HOLD PROCESSING FOR NODE HAVING 3 CHILD NODES
ONLY 1 CHILD NODE IS HOLD, AND THE REST IS RESET
S6616
PROCESSING FOR CASE WHERE ONLY 1 CHILD NODE IS HOLD, AND THE REST IS RESET
ONLY 2 CHILD NODES ARE HOLD, AND THE REST IS RESET
S6618
PROCESSING FOR CASE WHERE ONLY 2 CHILD NODES ARE HOLD, AND THE REST IS RESET
else
S6620
INTRA-GROUP COMPLETE HOLD PROCESSING FOR NODE HAVING 3 CHILD NODES
RETURN

FIG.54

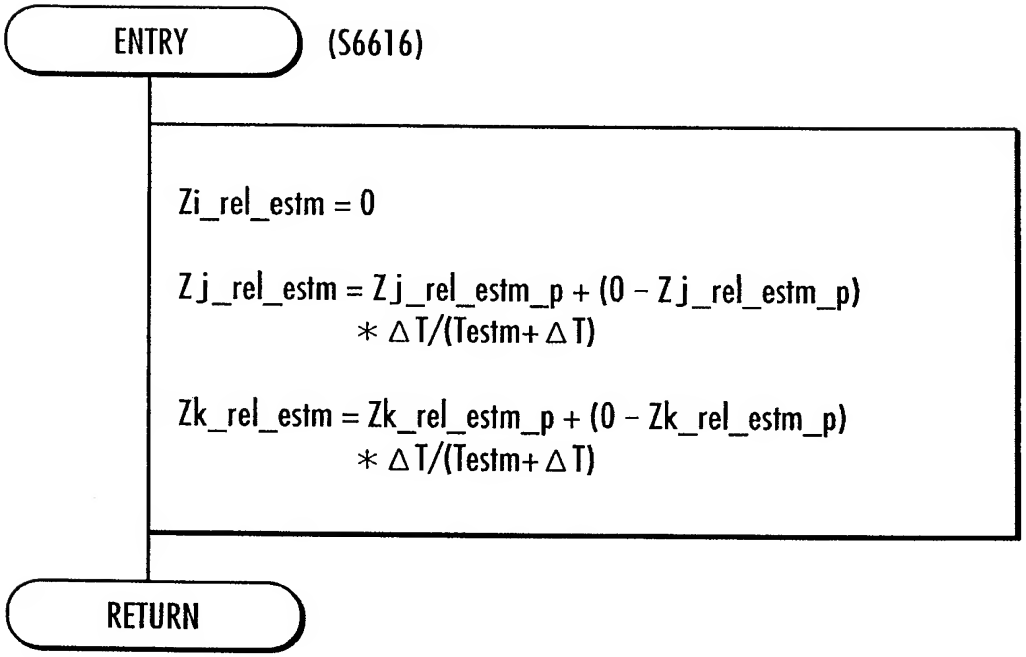

ENTRY
(S6616)
Zi_rel_estm = 0
Zj_rel_estm = Zj_rel_estm_p + (0 − Zj_rel_estm_p)
* ΔT/(Testm+ΔT)
Zk_rel_estm = Zk_rel_estm_p + (0 − Zk_rel_estm_p)
* ΔT/(Testm+ΔT)
RETURN

FIG.62

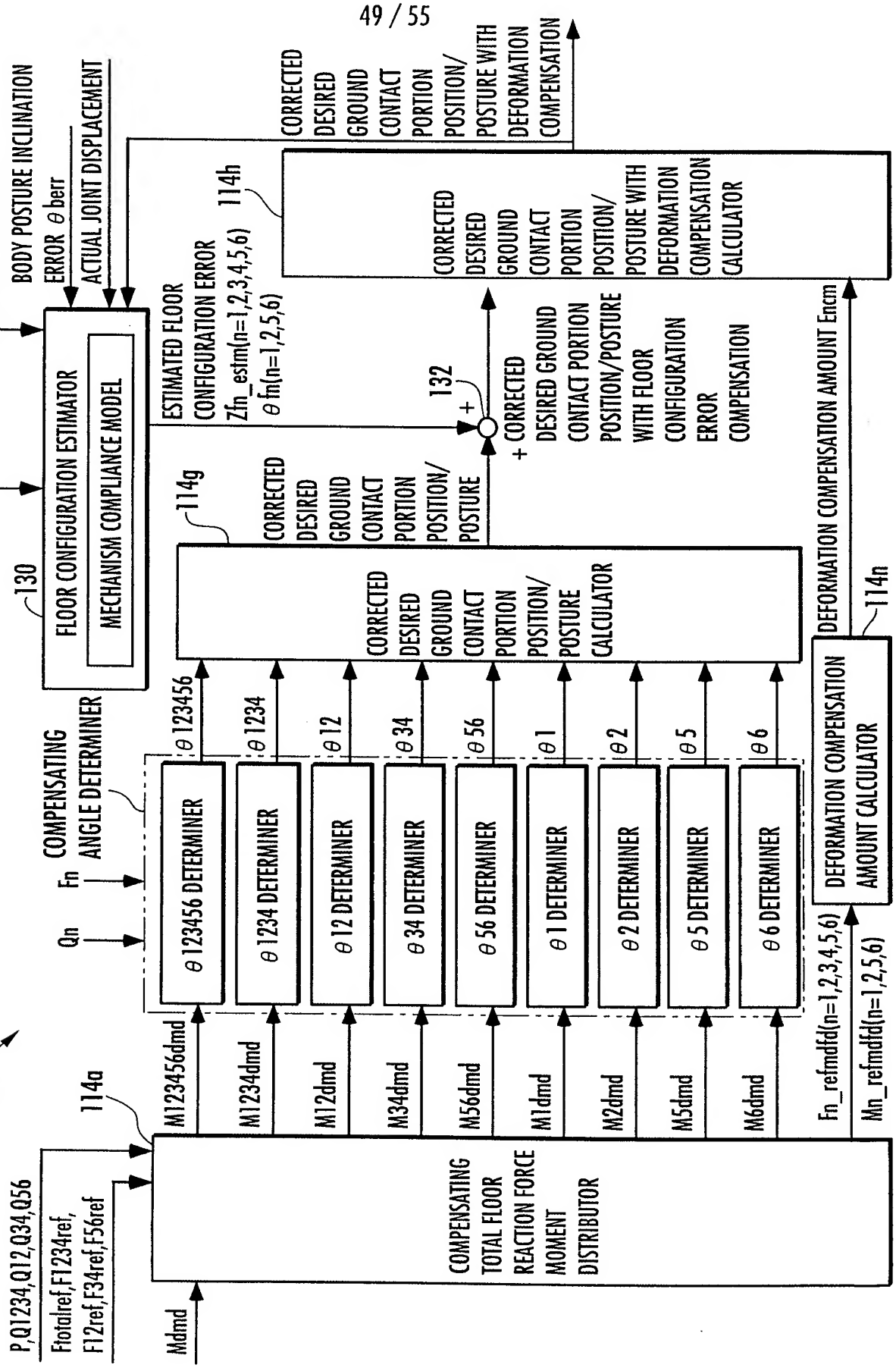

P,Q1234,Q12,Q34,Q56
Ftotalref,F1234ref,
F12ref,F34ref,F56ref
Mdmd
114
114a
COMPENSATING
TOTAL FLOOR
REACTION FORCE
MOMENT
DISTRIBUTOR
M123456dmd
M1234dmd
M12dmd
M34dmd
M56dmd
M1dmd
M2dmd
M5dmd
M6dmd
θ123456 DETERMINER
θ1234 DETERMINER
θ12 DETERMINER
θ34 DETERMINER
θ56 DETERMINER
θ1 DETERMINER
θ2 DETERMINER
θ5 DETERMINER
θ6 DETERMINER
Qn
Fn
COMPENSATING
ANGLE DETERMINER
θ123456
θ1234
θ12
θ34
θ56
θ1
θ2
θ5
θ6
CORRECTED
DESIRED
GROUND
CONTACT
PORTION
POSITION/
POSTURE
CALCULATOR
114g
DEFORMATION COMPENSATION
AMOUNT CALCULATOR
Fn_refmdfd(n=1,2,3,4,5,6)
Mn_refmdfd(n=1,2,5,6)
114n
DEFORMATION COMPENSATION AMOUNT Encm
+
132
+ CORRECTED
DESIRED GROUND
CONTACT PORTION
POSITION/POSTURE
WITH FLOOR
CONFIGURATION
ERROR
COMPENSATION
CORRECTED
DESIRED
GROUND
CONTACT
PORTION
POSITION/
POSTURE WITH
DEFORMATION
COMPENSATION
CALCULATOR
114h
ESTIMATED FLOOR
CONFIGURATION ERROR
Zfn_estm(n=1,2,3,4,5,6)
θfn(n=1,2,5,6)
130
FLOOR CONFIGURATION ESTIMATOR
MECHANISM COMPLIANCE MODEL
Qn(n=1,2,3,4,5,6)
Fn_act(n=1,2,3,4,5,6)
Mn_act(n=1,2,3,4,5,6)
BODY POSTURE INCLINATION
ERROR θberr
ACTUAL JOINT DISPLACEMENT
CORRECTED
DESIRED
GROUND
CONTACT
PORTION
POSITION/
POSTURE WITH
DEFORMATION
COMPENSATION

FIG.25

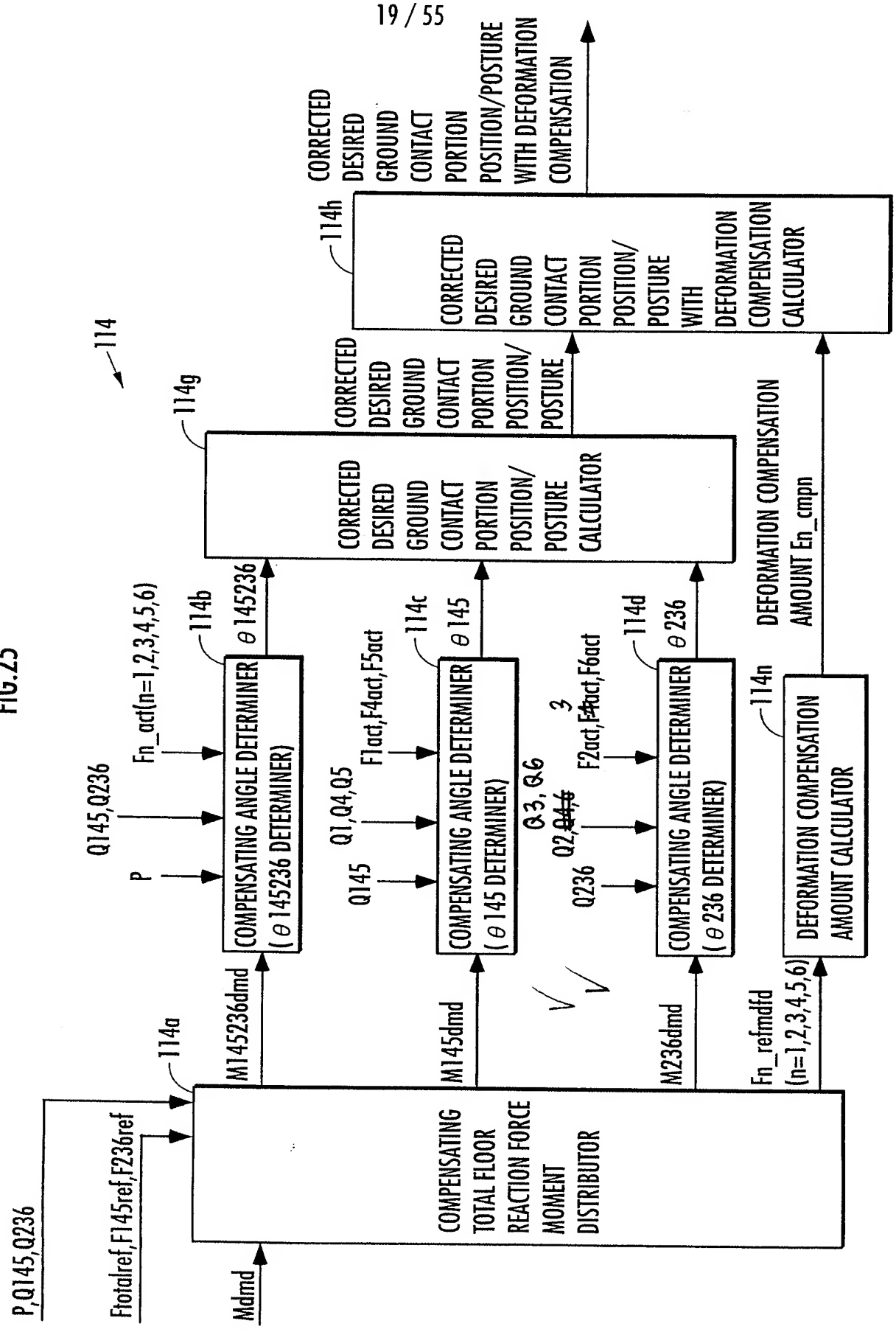

114
P,Q145,Q236
Ftotalref,F145ref,F236ref
Mdmd
114a
COMPENSATING TOTAL FLOOR REACTION FORCE MOMENT DISTRIBUTOR
M145236dmd
M145dmd
M236dmd
Fn_refmdfd (n=1,2,3,4,5,6)
114n
DEFORMATION COMPENSATION AMOUNT CALCULATOR
DEFORMATION COMPENSATION AMOUNT En_cmpn
114g
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/ POSTURE CALCULATOR
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/ POSTURE
114h
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/POSTURE WITH DEFORMATION COMPENSATION
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/ POSTURE WITH DEFORMATION COMPENSATION CALCULATOR
Q145,Q236
P
Fn_act(n=1,2,3,4,5,6)
114b
COMPENSATING ANGLE DETERMINER (θ145236 DETERMINER)
θ145236
Q1,Q4,Q5
Q145
F1act,F4act,F5act
114c
COMPENSATING ANGLE DETERMINER (θ145 DETERMINER)
θ145
Q3, Q6
Q2,Q4
Q236
F2act,F4act,F6act
114d
COMPENSATING ANGLE DETERMINER (θ236 DETERMINER)
θ236

FIG.35

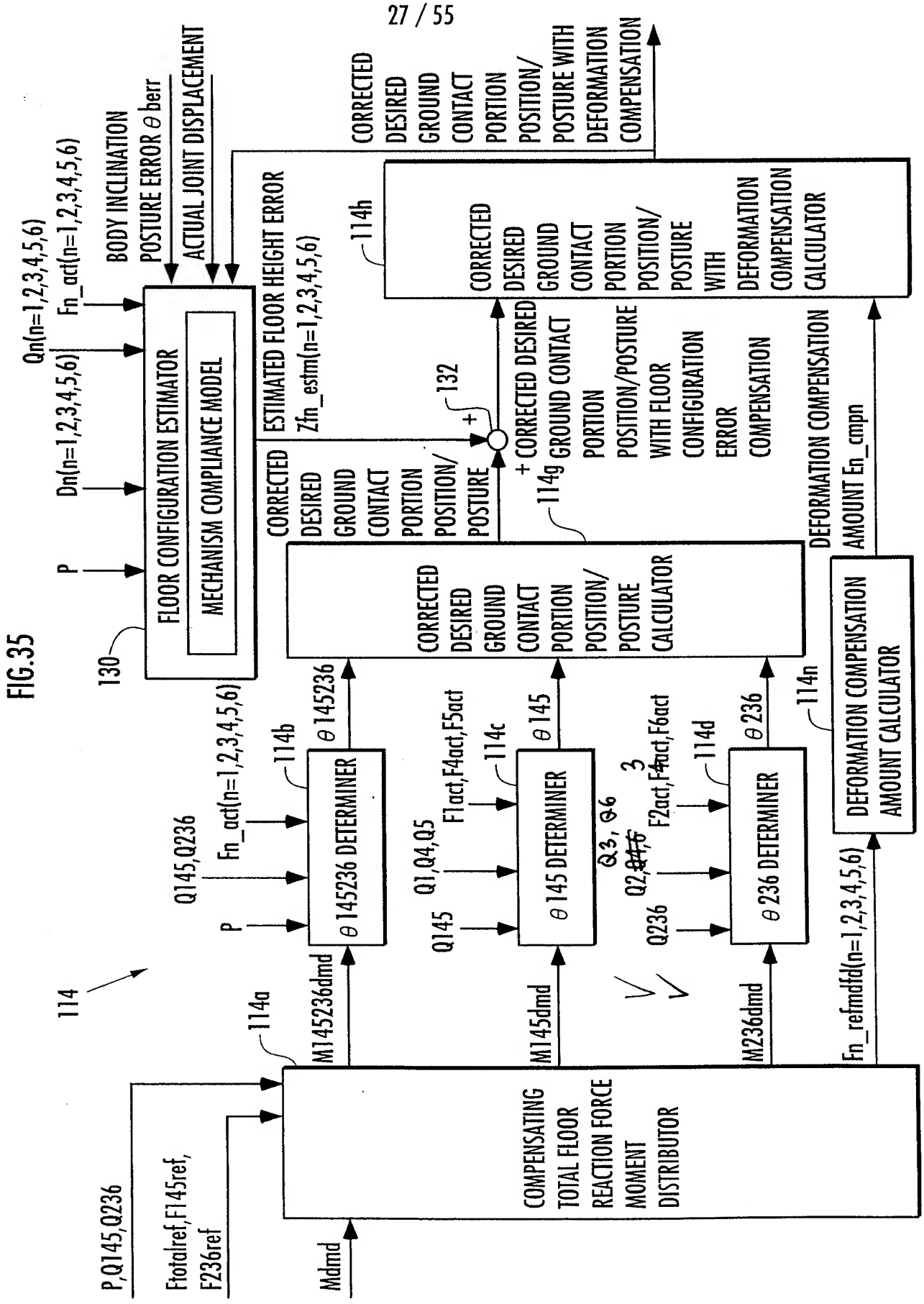

P,Q145,Q236
Ftotalref,F145ref,
F236ref
Mdmd
114
COMPENSATING TOTAL FLOOR REACTION FORCE MOMENT DISTRIBUTOR
114a
M145236dmd
M145dmd
M236dmd
Fn_refmdfd(n=1,2,3,4,5,6)
θ145236 DETERMINER
θ145 DETERMINER
θ236 DETERMINER
DEFORMATION COMPENSATION AMOUNT CALCULATOR
114b
114c
114d
114n
Q145,Q236
Fn_act(n=1,2,3,4,5,6)
Q1,Q4,Q5
Q145
F1act,F4act,F5act
Q3, Q6
Q2, Q4, Q5
Q236
F2act,F4act,F6act
θ145236
θ145
θ236
DEFORMATION COMPENSATION AMOUNT Fn_cmpn
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/POSTURE CALCULATOR
114g
+ CORRECTED DESIRED GROUND CONTACT PORTION POSITION/POSTURE WITH FLOOR CONFIGURATION ERROR COMPENSATION
132
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/POSTURE
ESTIMATED FLOOR HEIGHT ERROR
Zfn_estm(n=1,2,3,4,5,6)
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/POSTURE WITH DEFORMATION COMPENSATION
114h
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/POSTURE WITH DEFORMATION COMPENSATION CALCULATOR
130
FLOOR CONFIGURATION ESTIMATOR
MECHANISM COMPLIANCE MODEL
P
Dn(n=1,2,3,4,5,6)
Qn(n=1,2,3,4,5,6)
Fn_act(n=1,2,3,4,5,6)
BODY INCLINATION POSTURE ERROR θberr
ACTUAL JOINT DISPLACEMENT

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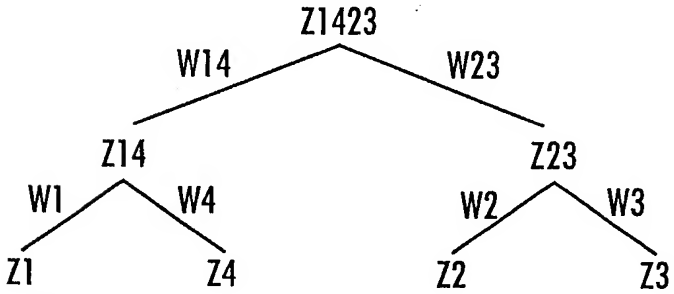
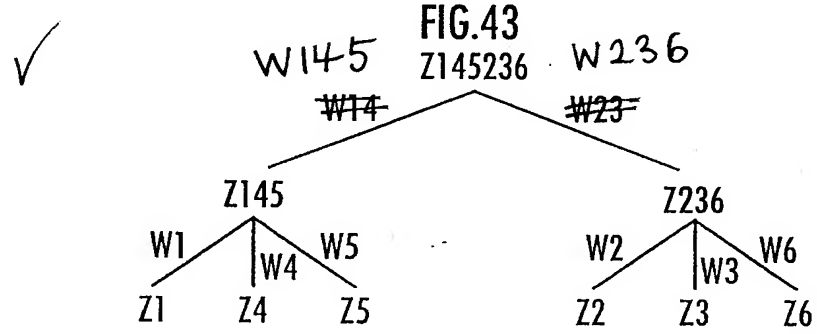
FIG.42



$Z14_with_bias = W1 \cdot Z1_with_bias + W4 \cdot Z4_with_bias$
$Z23_with_bias = W2 \cdot Z2_with_bias + W3 \cdot Z3_with_bias$
$Z1423_with_bias = W14 \cdot Z14_with_bias + W23 \cdot Z23_with_bias$

$Z1_rel = Z1_with_bias - Z14_with_bias$
$Z4_rel = Z4_with_bias - Z14_with_bias$
$Z2_rel = Z2_with_bias - Z23_with_bias$
$Z3_rel = Z3_with_bias - Z23_with_bias$
$Z14_rel = Z14_with_bias - Z1423_with_bias$
$Z23_rel = Z23_with_bias - Z1423_with_bias$

FIG.43



$Z145_with_bias = W1 \cdot Z1_with_bias + W4 \cdot Z4_with_bias + W5 \cdot Z5_with_bias$
$Z236_with_bias = W2 \cdot Z2_with_bias + W3 \cdot Z3_with_bias + W6 \cdot Z6_with_bias$
$Z145236_with_bias = W145 \cdot Z145_with_bias + W236 \cdot Z236_with_bias$

$Z1_rel = Z1_with_bias - Z145_with_bias$
$Z4_rel = Z4_with_bias - Z145_with_bias$
$Z5_rel = Z5_with_bias - Z145_with_bias$
$Z2_rel = Z2_with_bias - Z236_with_bias$
$Z3_rel = Z3_with_bias - Z236_with_bias$
$Z6_rel = Z6_with_bias - Z236_with_bias$
$Z145_rel = Z145_with_bias - Z145236_with_bias$
$Z236_rel = Z236_with_bias - Z145236_with_bias$

FIG.49

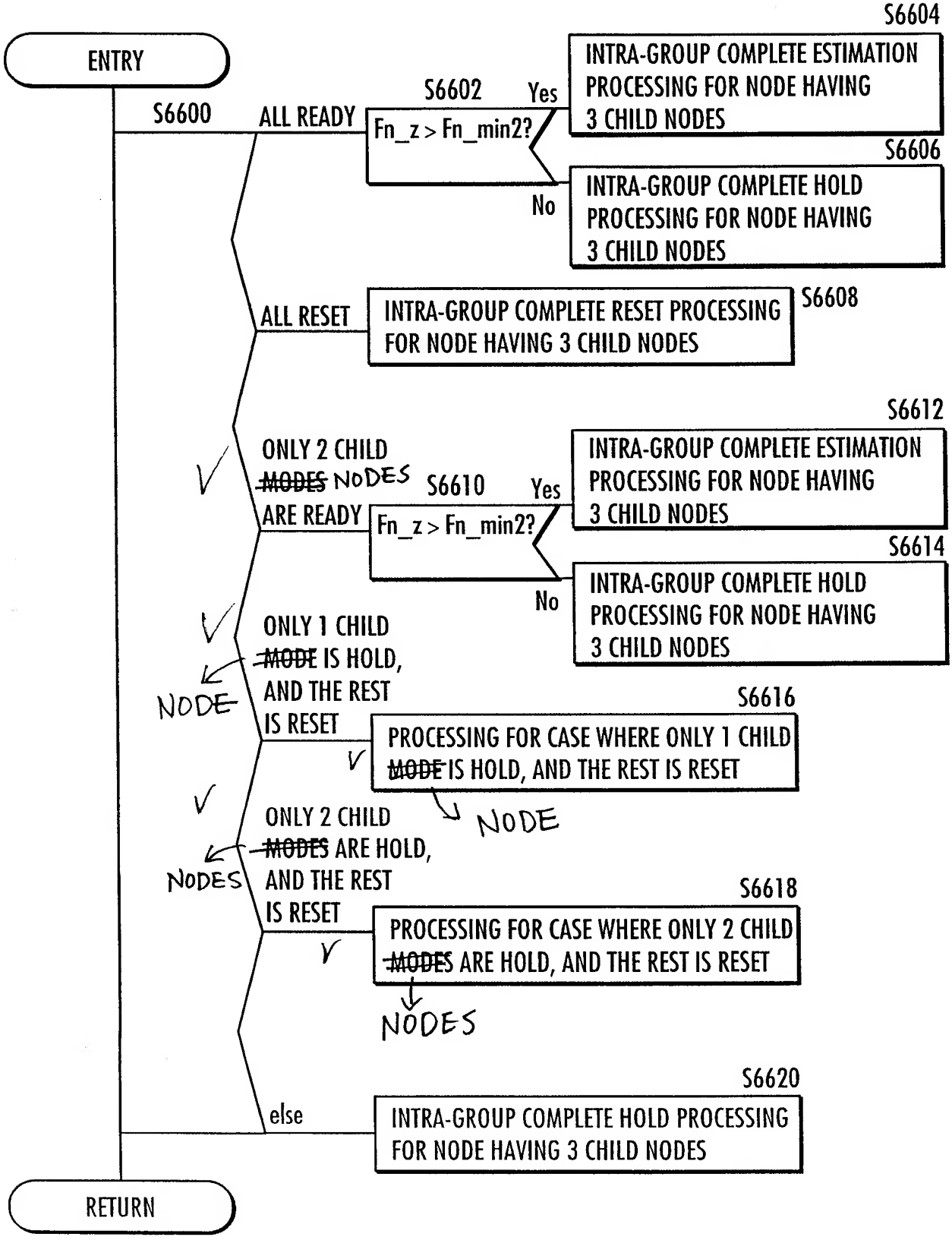

ENTRY
S6600
ALL READY
S6602
Fn_z > Fn_min2?
Yes
No
S6604
INTRA-GROUP COMPLETE ESTIMATION PROCESSING FOR NODE HAVING 3 CHILD NODES
S6606
INTRA-GROUP COMPLETE HOLD PROCESSING FOR NODE HAVING 3 CHILD NODES
ALL RESET
INTRA-GROUP COMPLETE RESET PROCESSING FOR NODE HAVING 3 CHILD NODES
S6608
ONLY 2 CHILD ~~MODES~~ NODES ARE READY
S6610
Fn_z > Fn_min2?
Yes
No
S6612
INTRA-GROUP COMPLETE ESTIMATION PROCESSING FOR NODE HAVING 3 CHILD NODES
S6614
INTRA-GROUP COMPLETE HOLD PROCESSING FOR NODE HAVING 3 CHILD NODES
ONLY 1 CHILD ~~MODE~~ IS HOLD, AND THE REST IS RESET
NODE
PROCESSING FOR CASE WHERE ONLY 1 CHILD ~~MODE~~ IS HOLD, AND THE REST IS RESET
S6616
NODE
ONLY 2 CHILD ~~MODES~~ ARE HOLD, AND THE REST IS RESET
NODES
PROCESSING FOR CASE WHERE ONLY 2 CHILD ~~MODES~~ ARE HOLD, AND THE REST IS RESET
S6618
NODES
else
INTRA-GROUP COMPLETE HOLD PROCESSING FOR NODE HAVING 3 CHILD NODES
S6620
RETURN

FIG.54

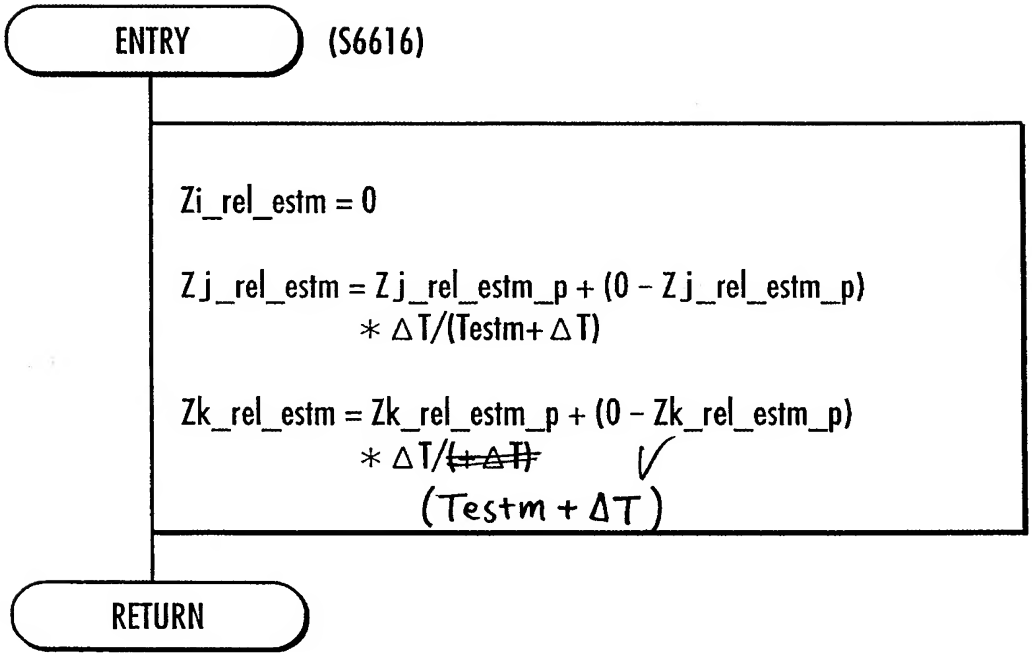
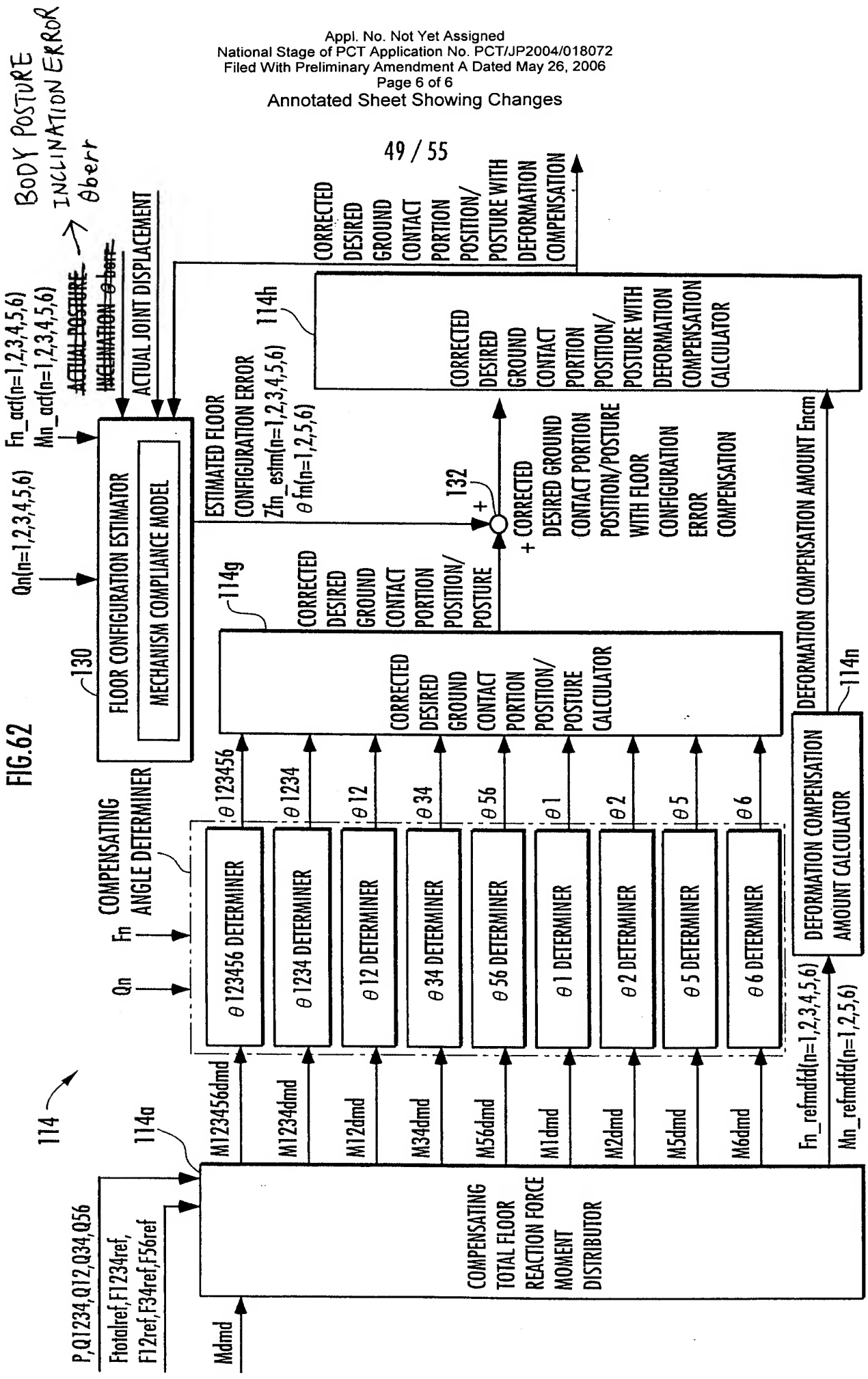

ENTRY
(S6616)
Zi_rel_estm = 0
Zj_rel_estm = Zj_rel_estm_p + (0 - Zj_rel_estm_p)
* ΔT/(Testm+ ΔT)
Zk_rel_estm = Zk_rel_estm_p + (0 - Zk_rel_estm_p)
* ΔT/(t+ΔT)
(Testm + ΔT)
RETURN

FIG.62


BODY POSTURE INCLINATION ERROR θberr
ACTUAL POSTURE INCLINATION θbact
ACTUAL JOINT DISPLACEMENT
Qn(n=1,2,3,4,5,6)
Fn_act(n=1,2,3,4,5,6)
Mn_act(n=1,2,3,4,5,6)
130
FLOOR CONFIGURATION ESTIMATOR
MECHANISM COMPLIANCE MODEL
ESTIMATED FLOOR CONFIGURATION ERROR
Zfn_estm(n=1,2,3,4,5,6)
θfn(n=1,2,5,6)
114h
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/ POSTURE WITH DEFORMATION COMPENSATION CALCULATOR
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/ POSTURE WITH DEFORMATION COMPENSATION
132
+
+ CORRECTED DESIRED GROUND CONTACT PORTION POSITION/POSTURE WITH FLOOR CONFIGURATION ERROR COMPENSATION
114g
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/ POSTURE CALCULATOR
CORRECTED DESIRED GROUND CONTACT PORTION POSITION/ POSTURE
DEFORMATION COMPENSATION AMOUNT Encm
114n
DEFORMATION COMPENSATION AMOUNT CALCULATOR
Fn_refmdfd(n=1,2,3,4,5,6)
Mn_refmdfd(n=1,2,5,6)
Qn
Fn
COMPENSATING ANGLE DETERMINER
θ123456 DETERMINER
θ1234 DETERMINER
θ12 DETERMINER
θ34 DETERMINER
θ56 DETERMINER
θ1 DETERMINER
θ2 DETERMINER
θ5 DETERMINER
θ6 DETERMINER
θ123456
θ1234
θ12
θ34
θ56
θ1
θ2
θ5
θ6
M123456dmd
M1234dmd
M12dmd
M34dmd
M56dmd
M1dmd
M2dmd
M5dmd
M6dmd
114
114a
COMPENSATING TOTAL FLOOR REACTION FORCE MOMENT DISTRIBUTOR
P,Q1234,Q12,Q34,Q56
Ftotalref,F1234ref,
F12ref,F34ref,F56ref
Mdmd